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DEPARTMENT OF THE ARMY
OFFICE OF THE ADJUTANT GENERAL
WASHINGTON, D.C. 20310

18 OACSFOR

IN REPLY REFER TO

AGAM-P (M) (21 Nov 67) FOR OT-RD 670718

27 November 1967

SUBJECT: ~~Operational Reports~~ - Lessons Learned, Headquarters, 39th
Signal Battalion (Spt), ~~Period Ending 31 July 1967~~

TO: SEE DISTRIBUTION

⑨ Operational rept. for quarterly period ending 31 Jul 67.

1. Subject report is forwarded for review and evaluation by USACDC in accordance with paragraph 6f, AR 1-19 and by USCONARC in accordance with paragraph 6c and d, AR 1-19. Evaluations and corrective actions should be reported to ACSFOR OT within 90 days of receipt of covering letter.

2. Information contained in this report is provided to insure appropriate benefits in the future from Lessons Learned during current operations, and may be adapted for use in developing training material.

BY ORDER OF THE SECRETARY OF THE ARMY:

⑪ 14 Aug 67

C. A. Stanfield

C. A. STANFIELD
Colonel, AGC
Acting The Adjutant General

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as

⑫ 206.

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(Continued on page 2)

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3

DEPARTMENT OF THE ARMY
HEADQUARTERS, 39TH SIGNAL BATTALION (SPT)
APO San Francisco 96291

SCCVSGSBC

14 August 1967

SUBJECT: Operational Report on Lessons Learned (RCS CSFOR-65) for
the Period 1 May - 31 July 1967 (RCS CSFOR-65) (WCDKAA)

THRU: Commanding Officer
2d Signal Group
ATTN: SCCVSGC
APO US Forces 96491

Commanding General
1st Signal Brigade (USASTRATCOM)
ATTN: SCCVOP
APO US Forces 96307

Commanding General
United States Army Vietnam
ATTN: AVHGCDH
APO US Forces 96307

Commander-in-Chief
United States Army Pacific
ATTN: GPOPOT
APO US Forces 96558

TO: Assistant Chief of Staff for Force Development
Department of the Army (ACSFOR, DA)
Washington, D.C. 20310

1. References:

- a. AR 1-19, dated 26 May 1966.
- b. USARV Regulation 1-19, dated 8 February 1967.
- c. 1st Signal Brigade (USASTRATCOM) Regulation 1-19, dated
20 March 1967.
- d. 2d Signal Group Regulation 1-19, dated 4 April 1967.

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14 August 1967 4

SUBJECT: Operational Report on Lessons Learned (RCS CSFOR-65) for
the Period 1 May - 31 July 1967 (RCS CSFOR-65) (WCDXAA)

2. Subject report is forwarded as Inclosure 1.

FOR THE COMMANDER:



SMITH A. DAWSON
CW4, USA
Adjutant

1 Incl
as

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5
DEPARTMENT OF THE ARMY
HEADQUARTERS, 39TH SIGNAL BATTALION (SPT)
APO San Francisco 96291

SCCVSGSBC

14 August 1967

SUBJECT: Operational Report for the Quarterly Period Ending 31 July 1967
REPORTS CONTROL SYMBOL CS FOR-65 (WDDXAA)

TO: SEE DISTRIBUTION:

Section I, Significant Organizational Activities.

1. (C) During the reporting period, the 39th Signal Battalion, assigned to the 2d Signal Group, was commanded by Lieutenant Colonel William C. Stephens. Captain Gallie Moore Jr. commanded Headquarters and Headquarters Detachment until 8 May 1967 when Captain George D. Elley assumed command. 1st Lieutenant Howard W. Cann III assumed command from Captain Elley on 12 June as the commander of HHD, 39th Signal Battalion. Company C, 36th Signal Battalion was commanded by Captain Daniel S. Klunk until 15 June 1967 when Captain George Elley assumed command. Company D, 41st Signal Battalion was commanded by Captain William P. Rexroad until 3 June 1967, when Captain Gallie Moore Jr. assumed command. The 518th Signal Company was commanded by Captain Bernard K. Kellom.

2. (C) Company C, 44th Signal Battalion, commanded by Captain Alan L. Grace, was assigned to the 39th Signal Battalion on 1 July 1967.

3. (C) The 588th Signal Company, commanded by Captain Edward Lee Jr., arrived in Vietnam on 2 May 1967 and was immediately assigned to the 39th Signal Battalion.

4. (C) During the reporting period the battalion performed its mission of installing, operating and maintaining signal communications in support of military operations in the Vung Tau Special Zone, Phuoc Tuy, Binh Tuy, Long Khanh, and Bien Hoa Provinces, Army Area Communications support for the Vung Tau area, the 9th Infantry Division, and the Advisors of the 18th ARVN Division, and microwave systems throughout the Republic of Vietnam.

5. (C) During the reporting period the 588th Signal Company deployed to the Republic of Vietnam from Fort Irwin, California. The unit departed Oakland, California, on 11 April 1967 and arrived in Vung Tau, 2 May 1967. From Vung Tau the unit was flown to Bearcat, where the advanced party had constructed temporary billets, made mess arrangements, and provided general articles of troop comfort. All equipment, with the exception of a 2 1/2 ton

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Page 1 of 3 Pages

GROUP-4

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truck which was accidentally dropped at Long Beach, California, during loading operations and suffered a bent frame, arrived at Bearcat intact. No difficulties were encountered in POM and shipping the equipment. The equipment left from Long Beach, California, on 23 March 1967 and arrived at Newport, RVN on 17 April 1967.

6. (C) Significant communications activities during the period 1 May 1967 through 31 July 1967 are as follows:

a. On 3 May 1967, Company C, 36th Signal Battalion, established an AN/TRC-24-AN/TCC-7 system (CC2H55) from Bearcat to Long Giao. This system was channelized on 8 May 1967.

b. In order to support the cutover to the integrated wide band communications system the 518th Signal Company was tasked to upgrade the Nha Trang to Cam Rahn Bay microwave system (77UMJ1) to 45 channels. On 9 May 1967 the additional twenty-three channels were added to the AN/TRC-29-AN/TCC-13 system to bring it to the required 45.

c. The 588th Signal Company's 2d Signal Center Platoon assumed signal responsibility for the Dong Tam Base Camp from the Provisional Platoon, Company C, 36th Signal Battalion on 11 May 1967. The platoon took over the responsibility for the operation and maintenance of a 200 line switchboard (AN/MTC-1), a communication center, three AN/TRC-24-AN/TCC-7 radio-carrier systems, and one AN/GRC-50-AN/TCC-7 radio-carrier system. The turnover of the site to the incoming platoon was accomplished easily partly through the transfer of some of the personnel on the site to the 588th Signal Company in order to maintain continuity of operations.

d. On 11 May 1967 the 588th Signal Company's Third Signal Center Platoon assumed responsibility for signal communications at Long Binh North from the Signal Operations Platoon, Headquarters and Headquarters Company, 36th Signal Battalion. This entailed the operation and maintenance of a 200 line switchboard (AN/MTC-1) and a communication center.

e. One 45 channel AN/TRC-29 microwave system AAM99 between Long Binh and MACVI was installed and completed on 14 May 1967 by the 518th Signal Company.

f. A one hundred pair cable into the 9th Inf. Division DTOC at Bearcat was completed on 17 May 1967 by Company C, 36th Signal Battalion.

g. On 25 May 1967, the 518th Signal Company deactivated the 45 channel microwave system (77UM89) between VC Hill and Saigon and activated a 45 channel AN/TRC-29 microwave system between Phu Cat Air Force base and Vung Chue Mountain 77UMIT.

h. Company C, 36th Signal Battalion replaced the AN/TRC-24 system CCH38 (Bearcat to Bien Hoa) by an AN/GRC-50 System AAW72 on 26 May 1967.

CONFIDENTIAL

CONFIDENTIAL

7

i. On 9 June 1967 Company D, 41st Signal Battalion and Company C, 36th Signal Battalion upgraded to 24 channels the AN/GRC-50 system (AAW68) between Bearcat and VC Hill. On the same date Company C, 36th Signal Battalion upgraded the AN/GRC-50 system (AAW64) between Bearcat and Long Binh to 24 channels.

j. To further assist in the cutover of IWCS the 518th Signal Company on 10 June 1967 completed the upgrade to 45 channels on the 77UMV9, AN/TRC-29 microwave system between Phang Rang and Cam Ranh Bay.

k. On 17 June 1967 in a reorganization of battalion areas of responsibility the 588th Signal Company lost its 1st Signal Center platoon to the 587th Signal Company and was assigned the Signal Center platoon at Long Giao from the 595th Signal Company. The platoon operates and maintains a two hundred line switchboard (AN/MTC-1), a communication center, three AN/TRC-29 systems and one AN/GRC-50 system.

l. Because of the reorganization of battalion areas of responsibilities the 588th Signal Company on 27 June 1967 also assumed signal responsibility of the relay site on Hill 837 (Nui Chua Chan). They operate two AN/GRC-50 terminals (AAW70, AAW71), two AN/TRC-24 terminals (AAH56, AAH25), and two relay AN/TRC-24 systems (AAH41, 77UHF3).

m. Company C, 44th Signal Battalion during the month of July installed, operated and maintained HF equipment at three sites in the 18th ARVN Div Advisor O&I Net. They operate secure AN/GRC-26 radio teletype terminals at Xuan Loc for the Division Headquarters, and Phuoc Le (Ba Ria) for the Sector Headquarters. At Ham Tan they operate a secure AN/GRC-46 teletype terminal for the Sector Headquarters there.

n. Because of the need for communications in to the new USARV Headquarters at Long Binh the 518th Signal Company installed 45 channel microwave systems AAM95, AAM97 and AAM98 AN/TRC-29 between Long Binh and new MACV on 5 July 1967.

o. To support all the antennas required for the new systems, the 518th Signal Company erected a 162 ft AB 216 tower at Long Binh. This was completed on 12 July 1967 and one antenna was transferred.

p. July 1967 the 518th Signal Company sent a quality assurance team to work on microwave system AAM99 to reduce the noise levels on the system. By using critical maintenance and alignment along with a frequency change the noise levels were reduced by 10db.

Page 3 of 3 Pages

CONFIDENTIAL

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8

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14 August 1967

SUBJECT: Operational Report for Quarterly Period ending 30 April 1967
REPORTS CONTROL SYMBOL CSFOR-65

Section II Commanders Observations and Recommendations:

a. Section 2 Part I Observations

1. (U) Personnel:

Rotation of Personnel

Item: Transfer of Personnel

Discussion: Along with the lateral transfer of equipment, the 588th Signal Company immediately upon arrival lost some of its key enlisted personnel on the grounds of obtaining staggered DEROS within the company. This exchange of personnel actually turned out to be beneficial to the company since the new men assigned to the 588th Signal Company had several months of communications experience in Vietnam.

Observation: Although at first glance the exchange of individuals from a newly arrived unit and an established unit in Vietnam would seem to hurt the morale of the newly arrived unit, it gives them advantages.

(1) It staggers DEROS's within the unit and (2) it gives the new unit personnel who are familiar with the communications in Vietnam.

2. (6) Operations:

Frequency Engineering

Item: Frequency Planning.

Discussion: As operating microwave terminals expands, frequency planning becomes more complex. A keypoint of interest is the use of adjacent channels on receiver and receiver-transmit configurations of the AN/TRC-29 in order to use more frequencies and thereby terminate more systems at a given station. Normal engineering indicates that this is a questionable practice subject to interference problems. However, adjacent receiver channels of 23, 24, and 25 were used on the Hon Tre Island-Nha Trang systems with favorable results. Channels 5, 6, and 7 were also used. These results were used to predict that adjacent channels would work on the Saigon-Long Binh systems. In addition to receiver-receiver configurations, transmit-receiver configurations were tried at Long Binh. One receiver, operated on channel 4 while a transmitter operated on channel 5. No interference resulted.

Observation: In many installations adjacent channels can be used on both, receive-receive and transmit-receive AN/TRC-29 configurations.

CONFIDENTIAL

9

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Fresnal Zone Clearance

Item: First Fresnal Zone Clearance for microwave propagation path.

Discussion: When planning AN/TRC-29 systems, considerable emphasis is placed upon finding the minimum obstacle clearance provided by a fresnal radius is a usual criteria and starting point. When the first fresnal radius is cleared, planning figures in the AN/TRC-29 manual TM-11-689 can be used to predict results. The Can Tho-Vinh Long microwave system was used to gain data. By using 40% first fresnal radius clearance, a 50:1 signal to noise ratio was obtained on the 20 mile path over flat marsh land.

Observation: When planning AN/TRC-29 microwave systems with a path length of less than 20 miles over flat marsh land, a 50:1 signal to noise ratio is predicted for a minimum clearance of 40% of the first fresnal radius.

Maximum Number of Antennas on a AB 216 Tower

Item: Maximum number of 8 foot diameter AS/554 antennas which can be placed on parallel sides of a 204 foot AB 216 tower.

Discussion: By using procedures outlined in AB 216 tower manual TM-11-5073, the maximum number of solid 8 foot diameter antennas which can be mounted on paralalled sides of the tower is found to be two. These calculations are based on the wind loading of a solid circle: However, many antennas are not solid and the given figure of two can be altered. The AS/554 antenna is perforated steel and has a total area of approximately one half of an 8 foot diameter solid circle. From these considerations it would appear that four or five AS/554 antennas could be mounted on parallel sides of the 204 foot AB 216 tower. The final factor is the exact wind loading characteristics of the AS 554. Since this information was not available, it was decided to use the rough calculations for predicting tower capacity. Five AS/554 antennas were temporarily mounted on parallel sides of the 204 foot AB 216 tower. Guy tension, anchor points, and tower sections were closely inspected to detect any tendencies toward failure. No failures were detected. Later the load was reduced to a total of four antennas.

Observation: For temporary installations, the 204 foot AB-216 tower will support five AS/554 antennas on parallel sides. However, it should be noted that the tower used to draw this conclusion has nearly perfect anchor points in hard clay ground. In addition, the tower was never subjected to winds above 40 knots.

Quality Control

Item: System Quality Control

Discussion: The quality of AN/TRC-29 microwave systems operated by the

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10

518th Signal Company has varied depending on the state of equipment maintenance and alignment, plus path characteristic fluctuation.

Observations: To best monitor the state of the operating systems, a total of 17 for the 518th, reports are initiated from each station once a day which gave noise levels on both master and slave of each operating AN/TCC-13.

These reports are collected by the operations section and used to spot possible problem areas. Seasonal propagation changes have been detected and recorded in this way. When severe quality problems are encountered on a system, hourly recordings of idle channel noises are recorded. Equipment operation and alignment problems in this way are easily separated from propagation fading.

Large Building Protection

Item: Protective measures for large communications facilities.

Discussion: A major project of this battalion has been to build a protective wall around the 1000 line Dial Central Office Vung Tau and adjoining buildings. A project of this size provides an experience factor that does not appear intactical protective measures.

Observation: When building a protective wall for an area of this dimension (20,000 square feet), the following procedure was used to provide rapid installation with materials available in Vietnam.

- (1) A four foot wide cement "sidewalk" was poured where the wall was to be placed. This was 3" to 4" in thickness.
- (2) Forms, approximately 14" in length and as high as required, were built using 1" X 12" planks and 4" X 4" posts.
- (3) The forms were placed in position with the posts to the outside. This was done to allow pressure to be placed against the form without damage.
- (4) The forms were placed on both edges of the "sidewalk" to provide a box like double wall which could be filled with laterite or sand.
- (5) The wood was treated with a preservative and then painted.

Subscriber Telephone Service

Subject: Limitation on Number of Subscribers on Switchboards

Discussion: Upon noticing that pickup times by operators on certain manual switchboards within the battalion area, an investigation was begun to determine the reasons why. It was discovered that on an AN/MTC-9

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switchboard the peg count was in excess of 14,000 calls per day, there were an excess number of trunks both local and LD on the board, and a number of unnecessary telephones installed on the post. To alleviate the problem a limitation of 60% fill on the board was established and the number of tactical trunks on the board was reduced with the tactical trunks that were removed were moved to the tactical board in the area. The results were that the peg count dropped to around 9,000 calls per day and pickup times improved.

Observation: The percentage of fill of AACS switchboard must be limited to approximately 60% of the capacity of the board. Unnecessary trunks must be removed with special emphasis on local trunks. If trunks are strictly tactical in nature they should be placed on tactical boards instead of AACS switchboards. These actions are necessary if proper switchboard service is to be provided.

A Semi - Tactical Vertical Antenna

Item: Vertical antenna for HF Omnidirection Radiation

Discussion: One antenna to work a particular high frequency was required to cover a wide geographical range of stations. Due to directional properties of conventional doublet and long wire antennas, a full 1/4 wave ground-plane type antenna was used at frequency of approximately 5 MHz.

The vertical section was made of mast sections AB-155 cut to a 1/4 wave length at the operating frequency. The mast sections were placed on insulator MT-76 which was detached from a shelter and placed on the ground. Normal insulated guys were used. Radials (8 ea) made from field wire were cut at the proper frequency. The inner conductor of RG 8/U coax was connected to the vertical section: outer braid was connected to the 8 radials spaced at equal angles around antenna base on the ground, (like spokes of a wheel).

Observation: Better than 1:1 SWR at frequency and extremely good area coverage. Small area required for installation. Ease of installation over doublet. Twenty five per cent better signal than with conventional 15" whip yet omni - directional. The drawbacks are not as much gain as a doublet, cut for one frequency only, must be posted as "Dangerous High Voltage" and must be installed in relatively cleared area. The installation has proved extremely effective for this application.

Electrical Power Engineering

Item: Electrical Power Requirements.

Discussion: As units of the battalion are assigned specific operating site locations on a permanent or semi-permanent basis, there is a need to provide far more stable and adequate power. Present TO&E equipment is designed for tactical field use with mobility a key factor. With the growth

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12

of fixed operational commo sites, maintaining continuous uninterrupted power is now imperative.

Small field generator sets such as the PU-619 (pair of 10KW, trailer mounted) develop many serious maintenance problems when they are used for continuous operation.

Observation: It is necessary when permanent base camps are established with relatively permanent communications at these sites that stable high capacity power be provided to power the communications emanating from that site.

3.(C) Training and Organization:

Secure Operation

Item: Secure RTT Operation.

Discussion: Company C, 44th Signal Battalion has recently received two AN/GRC-26 RTT vans and one AN/GRC-46 van for employment at two platoon sites and at company headquarters for a secure RTT O&I net for 18th Division (ARVN) MACV Advisors. This necessitates utilizing on line secure equipment either in the van or remoting the circuit into a commcenter, in both cases, newly arrived school trained RTT operators (O5C20) were found to be completely untrained in operating with on line crypto equipment. Also, most of the operators (80%) arrived on site with no security clearances.

Observation: The lack of training and lack of validated security clearances created delays and other problems in the installation and operation to the net.

Maintenance Assistance

Item: Battalion Maintenance Assistance Visits.

Discussion: During the past quarter, Battalion Maintenance representatives have shifted emphasis from inspection of units to providing more direct assistance to units. This is not to say that the system of inspecting to expose area of weakness should be eliminated. It is necessary device in the operational review of a unit. How to correct a deficiency however, should become a necessary part of the inspection procedure. This has been applied with significant success. Although a small team at battalion level cannot correct all maintenance deficiencies uncovered, progress in key areas can be made. Several examples can be cited. Where a PLL is inadequate, a battalion representative had provided missing parts manuals and started the PLL clerk in proper computations. Where an SOP is missing or inadequate, provide the appropriate references and assist in developing and adequate outline. Where logbooks are improperly maintained, show the appropriate references and provide training. Locating and expediting repair parts to remove equipment from deadline has been an important function of such a maintenance

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13

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team. The nature of the assistance will vary with the needs at the time.

Observation: A small but select maintenance team operating on a full time basis can make significant contributions to the maintenance posture of a battalion. The team will not become a "cure-all" for maintenance problems but will be a step closer to solution. Inspection teams organized on a part time basis are not normally geared to providing follow-up assistance.

4. (U) Intelligence: None.

5. (U) Logistics:

Switchboard Cords

Item: Shortage of Switchboard Cords.

Discussion: The first serious problem in the field of communications service in RVN that faced the 588th Signal Company was the severe shortage of switchboard cords for the Dong Tam Switchboard, due to heavy use (average of forty-four hundred (4400) calls (daily) the switchboard cords were wearing out at a faster rate than expected.

Observation: Supply personnel must keep a constant check on PLL in order to insure that critical items do not reach a zero balance.

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14

Section 2 Part II Recommendations

1. (C) Personnel:

Unit commanders deploying to the Republic of Vietnam should be made well aware of the fact that upon arrival in RVN, they will may be faced with the problem of losing key personnel. The reliance upon certain key individuals and so called experts could lead to operational disaster for the unit. Personnel must be cross trained to preclude this possibility.

2. (C) Operations:

a. To monitor the state of operating microwave systems reports must be initiated from each station giving technical information at least daily. This will allow personnel to spot possible problem areas and determine if any propagation changes are occurring or if the system needs critical alignment procedures.

b. Large signal communications buildings should have revetments constructed around them preferably other than just sandbag walls. By using wooden forms for the revetments it cuts down on the maintenance problem of sandbags and the danger of sandbag walls collapsing.

c. Switchboards in mobile configurations although they have a certain capacity should have a maximum fill of 60 to 70% because of operator efficiency. If the total capacity of the board is reached subscriber service falls off because of increased pickup times.

d. The feasibility of using larger generators, 30 to 100KW, to provide a more stable and centralized power source for signal sites that are semi-permanent in nature is highly indorsed by all unit and site commanders. The procurement of these type of generators for semi-permanent signal sites should be continued and made a matter for continued command emphasis.

3. (U) Training and Organization:

a. RTT operators (O5C20) should be processed for security clearances and trained for on line crypto operations of RTT vans prior to being sent overseas instead of waiting for the personnel to get to their new unit.

b. A properly managed maintenance inspection team with carefully selected members (knowledgeable in their specialty and knowledgeable in methods of assistance) should be a requirement for a battalion level maintenance program.

William C Stephens
WILLIAM C. STEPHENS
LTC SigC

10 Commanding

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15

SCCVSG-CO (14 August 1967) 1st Ind
SUBJECT: Operational Report for Quarterly Period Ending 31 July 1967
(RCS CSFOR-65)

HEADQUARTERS, 2D SIGNAL GROUP, APO 96491

30 AUG 1967

TO: Assistant Chief of Staff for Force Development, Department of the
Army (ACSFOR, DA), Washington, D.C. 20310

1. (C) Operational Report for Quarterly Period ending 31 July 1967 submitted by the 39th Signal Battalion has been reviewed and found to be adequate, with the following comments noted:

a. Section 2, Part 2, Recommendations, paragraph 1. Normally DEROS exchanges are made on a one (1) for one (1) basis, with the commander who is arriving in-country getting Vietnam-oriented and experienced personnel. Thus, the commander deploying to Vietnam will generally benefit from this procedure. Any sound management program does not rely on a few key personnel for the success of the operation. However, when exchanges of personnel for DEROS purposes are made, a close analysis of personnel, to include capabilities and responsibilities should be made. The 2d Signal Group has an aggressive cross-training program at all levels for units in-country.

b. Section 2, Part 2, Recommendations, paragraph 2b. 2d Signal Group recognizes the problem created by large communications facilities. 1st Signal Brigade has been consulted and additional solutions to the one in this report have been suggested. 2d Signal Group is closely evaluating solutions to this problem on a site-by-site basis. This is necessary due to installation requirements of the local commander and because of local physical security requirements. Solution implemented at the Vung Tau 1000 line Dial Central Office appears to be both adequate and appropriate for that location.

c. Section 2, Part 2, Recommendations, paragraph 2c. The number of subscribers is beginning to climb, but the peg count has not often surpassed 10,000 calls per day. Projected Dial Central Offices should alleviate this problem completely. The figures used are solid, based on operator work units, degree of training, etc. It is not possible to apply these limitations to all switchboards due to rapidly expanding situations.

d. Section 2, Part 2, Recommendations, paragraph 2d. 2d Signal Group approves providing requests are submitted in accordance with USAFV message WHGC-OT, dated 25 March 1967, Subject: Changes in Equipment Authorization. 39th Signal Battalion is preparing MTCB's to incorporate this idea.

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16

SCCVSG-CO (14 August 1967)

SUBJECT: Operational Report for Quarterly Period Ending 31 July 1967
(SCS CSFOR-65)

e. Section 2, Part 2, Recommendations, paragraph 3a. Training for on-line crypto procedures in COMUS would be of benefit to this unit. Individuals so trained would of necessity have requisite clearance processing handled prior to training in COMUS. Clearance granting is not a problem for battalions since the battalion commander has been given authority (2d Signal Group Regulation 604-5, 3 March 1967) to grant CONFIDENTIAL clearances and INTERIM SECRET and TOP SECRET clearances. Additionally, the battalion commander can authorize Crypto Access up to and including TOP SECRET.

f. Section 2, Part 2, Recommendations, paragraph 3b. A battalion maintenance team as described in the Lesson Learned section and recommended in the above paragraph is an effective way to reduce organizational maintenance deadline rates. The team, however, should be formed from within the battalions assets and should not be a permanent full-time position. It is not believed that a full-time team (as described in the Lessons Learned) could be utilized efficiently. The nucleus of such a team is authorized at the battalion maintenance section. Specialized technicians could be drawn from companies to supplement the abilities of the organic battalion capability.

g. Section 2, Part 1, Observations, page 5, Fresnal Zone Clearance. The conclusion arrived at by the 518th Signal Company is not complete or entirely correct. A 50:1 signal plus noise to noise ratio is predicted but this assumes no fading. A short path system with less than 100% Fresnal Zone Clearance will be subjected to as much as 30db fading over a 24 hour period. The depth and frequency of fading increases as the clearance decreases. Hourly and seasonal fading is more pronounced over rice paddy and marsh land.

A 34db S+N/A ratio is at best a marginal system even if there was no fading. Minimum standards require a 47db S+N/A ratio for a high quality circuit and when the circuit S+N/A ratio drops below 27db it will normally become unusable.

No system should be installed with less than 70% Fresnal Zone Clearance. When operating over rice paddy or marsh land this minimum figure should probably be raised to 85%. Fading depth can be reduced by placing antenna at one terminal as high as possible and the antenna at the opposite terminal as low as possible still maintaining an 85% Fresnal Zone Clearance. (High-low antenna installation).

In summary the observation neglects the effect of fading on S+N/A ratio. A conclusion of this nature should not be drawn unless extensive measurements made over at least a year's time are made to substantiate it.

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17

SCCVSG-CO (14 August 1967)

SUBJECT: Operational Report for Quarterly Period Ending 31 July 1967
(RCS CSFOR-65)

h. Section 2, Part 1, Observations, page 7, A Semi-Tactical Vertical Antenna. For short range sky-wave propagation in VN, a horizontal dipole, quarter wave length or less above the ground and aligned north and south will provide a better S+N/N ratio than a vertical antenna.

All stations in the net must align their antennas in the same manner. (Axis of the antenna north and south regardless of geographical position.) If this is done, up to 10db of S+N/N improvement can be realized over conventional orientation of dipoles.

2. (U) I concur in the commander's Observations and recommendations portions of the report, except as noted above.

Daniel C. Bird

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as

DANIEL C. BIRD
Colonel, SigC
Commanding

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18

SCCVOP (14 Aug 67) 2d Ind
SUBJECT: Operational Report--Lessons Learned For The Period 1 May - 31
July 1967 (RCS CSFOR-65) (WCDXAA)

DA, HQ, 1st Sig Bde (USASTRATCOM), APO SF 96307 5 Sep 67

TO: Commanding General, United States Army Vietnam, ATTN: AVHGG-DH,
APO 96375
Commanding General, United States Army Strategic Communications Command,
Fort Huachuca, Arizona, 85613

1. (U) Forwarded for your information, one copy of Operational Report
Lessons Learned for the 39th Signal Battalion.

2. (C) Concur in Commander's Observations and Recommendations and
add the following comments:

a. Item: Fresnel Zone Clearance, Section II, Part I, page 5.
Concur with the Group Commander that extensive measurements and tests should
be conducted over a considerable time period in order to substantiate findings.
It should be noted that the Commander's Observations and Recommendations were
based on a particular path and therefore, considering variation of terrain,
atmospheric conditions and seasonal changes, etc, his predictions may not be
valid for similar paths. This is also true of the Group Commander's comments
concerning the amount of fade to be experienced.

b. Item: Secure RTT Operation, Section II, Part I, page 8.
This Hq recommended that SESS, Ft Gordon, Ga. include secure operation of
RATT utilizing the KW-7 Crypto device in a letter to SESS signed by General
Terry on 11 July 1967. Individual security clearances for communications
personnel who obviously will handle classified traffic, documents and equip-
ment should be initiated at the time they are selected to attend an MOS course.

3. (C) Nonconcur in Group Commander's comments, reference Semi-
Tactical Vertical Antenna, para 1(h), since the semi-tactical antenna
(omni-directional) was installed primarily to obtain area coverage; not
to improve the S/N ratio. A conventional dipole is bi-directional in
nature and therefore does not provide maximum area coverage.

FOR THE COMMANDER:

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s/Thomas D. Bledsoe Jr.
t/THOMAS D. BLEDSOE Jr.
Colonel, GS
Chief of Staff

14

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*Downgraded at 3 year intervals
Declassified after 12 years
DOD DIR 5200.10*

CONFIDENTIAL

21 Oct 1967

19
AVAGC-DST (14 Aug 67) 3d Ind
SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 July 1967 (AGC CAGC-65) (U)

HEADQUARTERS, UNITED STATES ARMY VILKIN, APO San Francisco 96375

TO: Commander in Chief, United States Army, Pacific, ATTN: GPCP-UT,
APO 96558

1. (U) This headquarters has reviewed the Operational Report-Lessons Learned for the period ending 31 July 1967 from Headquarters, 39th Signal Battalion (SPT) (CDXA) as indorsed.

2. (C) Pertinent comments follow:

a. Reference item concerning Fresnel Zone Clearance; section II, part I, page 5, and paragraph 2a, 2d Indorsement. Concur with both the Group Commander's and Brigade Commander's observations. As indicated by the Group Commander, the Battalion Commander did not consider all factors in making his conclusions.

b. Reference item concerning Semi-tactical Vertical Antenna, paragraph 1(h), page 7 and paragraph 3, 2d Indorsement. With respect to the last sentence of paragraph 3, 2d Indorsement, the statement is true only if the doublet antenna is at least $\frac{1}{2}$ wave length above the ground. The Group Commander's observations specifically state $\frac{1}{4}$ wave length height (or less). At this height, the $\frac{1}{2}$ wave doublet loses its directional characteristics.

3. (U) Unit will be notified of actions and comments by routine indorsement which returns this report.

FOR THE COMMANDER:

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William H. Burk 97
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10-11-67

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Declassified after 12 years
DOD DIR 5200.10

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GPOP-DT (14 Aug 67)

4th Ind (U)


SUBJECT: Operational Report for the Quarterly Period Ending 31 July 1967
from HQ, 39th Signal Battalion (UIC: WCDXAA)(RCS CSFOR-65)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 8 NOV 1967

TO: Assistant Chief of Staff for Force Development, Department of the
Army, Washington, D. C. 20310

This headquarters has evaluated subject report and forwarding indorsements and concurs in the report as indorsed.

FOR THE COMMANDER IN CHIEF:


HEAVRIN SNIDER
CPT, AGC
Asst AG

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